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EXAMINER

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ART UNIT PAPER NUMBER

2814

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Please find below and/or attached an Office communication concerning this application or proceeding.



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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 09/259,849
Filing Date: March 01, 1999
Appellant(s): FARRAR, PAUL A.

Timothy Clise
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 4/13/06 appealing from the Office action
mailed 9/8/05.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

No evidence is relied upon by the examiner in the rejection of the claims under appeal.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Please see the attached Appendix A for the detail of the Official action.

(10) Response to Argument

The Appellant argues that the combination of Havemann and Brown does not disclose the limitation in claim 1, "wherein the selected areas are directly on a top surface of the insulator". The same argument applies to claims 4, 12, and 38, wherein the insulator is oxide layer and polymer layer. (See the brief's pages 13-18.)

It should be noted that the selected area is an area, as claimed in the instant invention, is a predetermined area, which is a portion of the insulator layer. In other word, this area is actually the surface area of the layer. In figure 1h, Havemann discloses a method of forming a conductor layer 122 (col. 3, lines 14-17) over a planarized surface 120 (col.2, lines 45-47). Layer 122 includes a top surface and a bottom surface. The top surface inherently includes selected areas. Figure 1f shows the barrier layer 150 and seed layers 152 are deposited on the surface area of the layer 122. These barrier and seed layers then removed from the surface or selected areas of the layer 122. Since selected areas are in fact portions of the top surface of the insulator layer 122, the barrier and seed layer are indeed on top of the insulator layer even though they are not directly disposed on the insulator layer. And the selected areas are the areas that are actually directly on top of the surface of the insulator. The claim language does not require that the barrier layer and seed layer formed directly on the selected areas. Therefore, Havemann teaches the claim limitation, "wherein the

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selected areas are directly on a top surface of the insulator.” The same response applies to Brown. For example, in figures 4A-4C, Brown discloses an analogous trench structure including barrier layer 400A and a seed layer 400B formed on an insulator layer 420. The insulator includes top surface, which comprises selected areas. The barrier and seed layers then removed from the top surface of the insulator layer. Thus, they are removed from the selected areas. The selected areas are portions of the top surface; it means they are indeed directly on the top surface. In conclusion, selected areas are in fact parts, or portions, of the top surface of the insulator layer; therefore, they should be directly disposed on the surface area. The above layers of these areas then selectively removed.

Appellant further argues that the combination does not provide a motivation, and the statements, which provide by the Examiner, are unsupported by the references and therefore are within the personal knowledge of the Examiner (see the brief’s page 19.) In regard to claim 13, the claim recites the depth of the trench between fifty and 1000 angstroms. This is a large range and not a critical feature of the instant invention since the instant specification does not disclose the advantage of the depth or because the Appellant has not disclosed that this depth provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected applicant’s invention to perform equally well with either shape because they perform the same function of connecting between layers. Appellant provides no evidence or argument stating how this feature is critical to the instant invention. Thus, the teaching of the above combination may arrive with the same

structure, which functions the same as the instant device. See also, "In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 1% USPQ 90 (CCPA 1976/ In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990) (The prior art taught carbon monoxide concentrations of "about 1-5%" while the claim was limited to "more than 5%." The court held that "about 1-5%" allowed for concentrations slightly above 5% thus the ranges overlapped." (MPEP 2144.04).

Note that the specification contains no disclosure of either the critical nature of the claimed dimensions of any unexpected results arising therefrom. Where patentability is aid to be based upon particular chosen dimensions or upon another variable recited in a claim, the Applicant must show that the chosen dimensions are critical. In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Appellant alleges that the prior art references teach away from the combination by substituting the metals (see the brief's page 19). The Office respectfully disagrees; however, Appellant's position again is not clear for the secondary reference Brown was used for its teaching of providing a different conductive metal. The fact that different art-recognized equivalent connection means present in the mentioned references does not teach away from utilizing the metal of Brown in the Havemann reference. Metal to provide heat dissipation and electrical conductive for a semiconductor device is common place as evidenced by previously cited of both references. As mentioned in the point I above, Brown is used to only show the obviousness of the metal material. This material, therefore, may be used in either device.

Furthermore, by substituting a conductive metal layer with another does not constitute a teaching away from one to another since the substituted metal may improve the electrical connection of the layer. In this case, silver is a substituted metal and may

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be used to replace copper or aluminum since silver provides a better strength and can sustain higher temperatures. This is also well known to one of ordinary skill in the art. Therefore, the combination is proper and does not teach away from the Havemann's invention.

Appellant submits that the statements provided by the Examiner are not supported by the record (see the brief's page 20.) The Examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Brown indeed teaches that the selectively deposit a layer to a selective area decreases the cost of raw materials (see Brown's col. 16, lines 42-60.)

Appellant further argues that the combination of Havemann, Brown, and Ting does not disclose all of the claimed limitations, claims 42-44 and 50-55 (see the brief's pages 23-24.) Appellant submits that Ting does not suggest the missing element in Havemann and Brown, "wherein the selected areas are directly on top surface of the oxide layer." The response to this argument is addressed above regarding to claim 1, wherein the selected areas are portions of the surface area.

The Appellant further submits that there is no motivation for the combination of Havemann, Brown, and Ting in the rejection of claims 18, 22, 26, 33, and 37 (see the brief pages 24-25.) This argument is not found persuasive. In the Appendix (the final

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office action), the Examiner provides that it would have been obvious to one of ordinary skill in the art at the time of the invention was made to use an aluminum-copper seed layer instead of a copper seed layer and to form a conductor comprising any of gold, silver, aluminum or copper since it has been held to be within the general skill of an artisan in the art to select a known conductive material on the basis of its suitability for the intended use as a matter of obvious in a certain design. These materials indeed function the same as providing electrical connection. In re Leshin, 125 USPQ 416. Furthermore, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992.)

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Nathan Ha



Conferees:

Ricky Mack



Wael Fahmy

